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EXAMINER

HARRIS, TIA M

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 07/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/349,232

Applicant(s)

OHSAWA ET AL.

Examiner

Tia M Harris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4,8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figure 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The disclosure is objected to because of the following informalities: "shit" should be changed to "shift" (pg 2, line 1; pg 20, line 26); incomplete sentence (pg 8, line 23 – pg 9, line 3), and "he" should be changed to "the" (pg 32, line 9). Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Miyazaki et al (hereafter referred to as Miyazaki) (JP 09-331420).

**(Claim 1)** Applicant's admitted prior art discloses a solid state image sensor device (see fig 10) comprising an image sensing cell array portion (1) including a plurality of unit cells (13), the unit cells being arranged in a matrix form on a semiconductor substrate (see fig 10), the image sensing cell array portion having a photosensitive pixel region (composed of photosensitive pixels (13)) and an optical black pixel region (composed of optical black pixels

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(13')), the unit cells of the photosensitive pixel region for sensing an image (pg 3, lines 2-3), and the unit cells of the optical black pixel region for defining an optical black level (pg 3, lines 14-17), a selecting circuit (2) for selecting the unit cells of the image sensing cell array portion in a unit of one horizontal line of the image sensing cell array portion, and a plurality of vertical signal lines (18) on which signals are read out from the unit cells selected by the selecting circuit. The admitted prior art does not specifically disclose wiring short-circuiting at least two of the vertical signal lines in the optical black pixel region with each other.

Miyazaki discloses a solid-state image pickup device that includes wiring short-circuiting at least two of the vertical signal lines in the optical black pixel region with each other (section 0017, lines 1-5; see drawing 3). This is done in order to equalize pixel output and reduce random noise (section 0018).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the wiring disclosed by Miyazaki in the device of the admitted prior art in order to equalize pixel output and reduce random noise.

**(Claim 2)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 3)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 4)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of

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the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 5)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring, and wherein at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 6)** Miyazaki further discloses the solid-state image sensor device wherein the wiring causes levels of the readout signals of the at least two vertical signal lines to be averaged (section 0017).

6. Claims 7-11, 13-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Shimoyama et al (hereafter referred to as Shimoyama) (5355164).

**(Claims 7 and 14)** Miyazaki discloses a solid-state image sensor device as discussed above with reference to claim 1. Miyazaki does not specifically disclose the image sensing cell array portion has a plurality of optical black pixel regions having optical black levels different from each other.

Shimoyama discloses a method and apparatus of correcting image read signals by removing the influence of dark current therefrom. This method and apparatus can be configured for a linear sensing device or area-sensing device (col 5, lines 12-16). Shimoyama discloses the image sensing cell area has a plurality of optical black pixel regions (BC,DC).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the image sensing array disclosed by Miyazaki would include a

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plurality of optical black pixel regions, in the manner taught by Shimoyama which is a common configuration of sensors used in detecting and removing the influence of dark current.

**(Claims 8 and 15)** See the rejection of claim 2 above.

**(Claims 9 and 16)** See the rejection of claim 3 above.

**(Claims 10 and 17)** See the rejection of claim 4 above.

**(Claims 11 and 18)** See the rejection of claim 5 above.

**(Claims 13 and 20)** See the rejection of claim 6 above.

7. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Shimoyama as applied to claim 7 above, and further in view of Matsunaga et al (hereafter referred to as Matsunaga) (US 6239839 B1).

Miyazaki in view of Shimoyama discloses a solid-state image sensor device as discussed above. Shimoyama further discloses the sensor comprises at least two optical black pixel regions (BC, DC), the unit cells of one (DC) of which includes a photoelectric conversion element and the unit cells of the other (BC) of which includes no photoelectric conversion element (col 3, lines 45-63). Shimoyama does not specifically disclose the photoelectric conversion elements are PN diodes. However, it is notoriously well known in the art for photoelectric conversion elements to be configured as PN junction diodes as taught by Matsunaga (col 8, lines 53-58; col 10, lines 13-29). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made that photoelectric conversion elements disclosed by Shimoyama would be pn junction diodes, as taught by Matsunaga which is a notoriously well known configuration for photoelectric conversion elements.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyazaki.

**(Claim 1)** Miyazaki discloses a solid state image sensor device comprising an image sensing cell array portion including a plurality of unit cells (1, 11), the image sensing cell array portion having a photosensitive pixel region (composed of photosensitive pixels (11)) and an optical black pixel region (composed of optical black pixels (1)), the unit cells of the photosensitive pixel region for sensing an image, and the unit cells of the optical black pixel region for defining an optical black level (section 0004, lines 1-5), a plurality of vertical signal lines on which signals are read out from the unit cells selected by a selecting circuit (see drawing 3), and wiring short-circuiting at least two of the vertical signal lines in the optical black pixel region with each other (section 0017, lines 1-5; see drawing 3). Although drawing 3 illustrates the sensor as a line sensor, Miyazaki states that it is also applicable to use an area sensor wherein the unit cells are arranged in a matrix form on a semiconductor substrate (section 0028, lines 1-4), and therefore, the selecting circuit would select the unit cells of the image sensing cell array portion in a unit of one horizontal line of the image sensing cell array portion (section 0028, lines 1-7), instead of cell by cell (as disclosed in section 0012).

**(Claim 2)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 3)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 4)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 5)** Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring, and wherein at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 6)** Miyazaki further discloses the solid-state image sensor device wherein the wiring causes levels of the readout signals of the at least two vertical signal lines to be averaged (section 0017).

### **Conclusion**

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Miyazaki et al (6130712) discloses a method of eliminating the influence of random noise produced by an optical black pixel on a reference output.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tia M Harris whose telephone number is 703-305-4807. The examiner can normally be reached on M-F 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-308-6606 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

tmh TMH  
July 28, 2003



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